

Atop Technologies



Business units



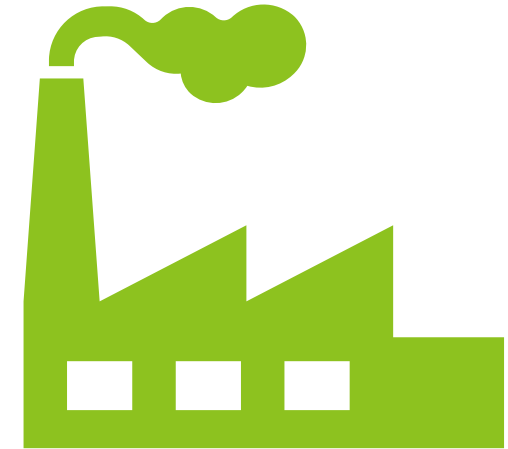
Industrial Networking

Ethernet and non-Ethernet based solutions for utilities, various vertical markets and factory automation



Pick-to-Light Solutions

Mass picking/putting solutions for warehouses and logistic providers with high turnover rates



Contract Manufacturing

Manufacturing and testing services of industrial-grade solutions in ATOP's manufacturing facilities

How we work



Global Presence



Our promises

To you, we will be:

- **Proactive** in anticipating your issues and your needs. We care about building long-lasting relationships, not just single exchanges.
- **Available**, at your time, in your locality—in most cases, even in your language—to discuss, to support and to clarify.
- **Knowledgeable** and competent, enabling you and your team to achieve your goals.
- **Flexible** in adjustment to meet your requirements, never stepping back from our responsibilities.
- Just **friendly**.

Solutions



Industrial Networking Devices



Industrial grade networking devices / NMS (Network Management System) managed / Security – IEC 62433-4-2 certified

Networking

Switches

Unmanaged

Managed

PROFINET Switches

Gigabit – Fiber Gigabit

Entry Level

Harsh Environments

L3 Switches

EN 50155

IEC 61850-3

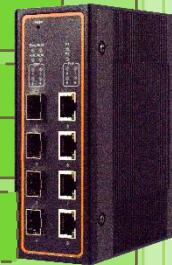
PoE switches

Secure Smart-Managed Switches / Secure Routers

Marine

Oil & Gas

NAT Switches



Wireless

Wired



Serial Servers /
Modbus Gateways /
Edge Computers /
Protocol Gateways



Wi-Fi APs
Wi-Fi Routers
Wi-Fi Mesh

3G/4G/5G
Gateways
NB-IOT Gateways

4G/5G Wired/ Wireless Routers



Precision Timing

Grandmaster Clock

Boundary Clock

Transparent Clock

Media Converters



PoE Injectors Remote I/O



Industrial Networking technology



IEC
62443

IEC
61850



EN50155
EN50121-4







Unmanaged	Managed and Lite-Managed	Layer-3
		
 <p>NAT switch and Router</p>	 <p>PoE</p>	 <p>PTP Grandmaster</p>

Industrial Networking technology

 	<p>Wi-Fi Access Points / Routers / Mesh</p>	<p>High-performance Wi-Fi – 802.11ac</p>
	<p>4G - 5G Sub6 – 5G mmWave Gateways and Routers</p>	<p>Low-power, low-footprint LTE Cat.1 - Cat. M1 - NB-IoT Gateways</p>

Industrial Networking technology

 	<p>Serial Servers Wired and Wireless</p>	<p>Smart-Grid Modbus and Protocol Gateways</p>	<p>Edge Computers</p>
	<p>PoE Injectors</p>	<p>Media Converters</p>	<p>Remote I/O</p>

Application Industries



Substation & Smart Grid



Automation



Smart City



Railway & Public Transport



Marine



Oil & Gas

Topics

- Industrial VS. Commercial Grade
- How to Pick the Right Industrial Switch
- L2 Switch Functionalities
- Why Layer 3 Switch
- Atop Offerings
- Q&A



Industrial VS. Commercial Grade

Guess How Many Degrees These Situations Are?



91.4°F



104°F



158°F



185°F

Harsh Environment and Stability

Durable, industrial-grade network solutions



- IEC61000 Test level III or higher



- Wide range of operating temperatures from -43°F (-43°C) to +185°F (85°C)



- Dual power supply design with redundant input power supply



- Fanless design

Long-term maintenance and Cybersecurity

Durable, industrial-grade network solutions



- Five-year warranty



- Minimum 10-year product cycle for industrial-grade products



- Built-in software safety feature



- Security certification for equipment(IEC62443)

Certification and Test

Durable, industrial-grade network solutions



- Electromagnetic interference (EMI) protection



- Surge Protection (Class 3 / 2KV)



- ESD Protection (Class 3 / 6~8KV)



- Shock Protection(IEC / MIL-STD)

How to pick the right industrial switch



How to pick the right industrial switch

- Type of switch
- Network speed and port density
- Scalability
- PoE Capabilities
- Management and monitoring
- Budget
- Compatibilities
- Vendor Support & Documentations
- Test and pilot run



Unmanaged Vs. Lite-Managed Vs. Managed

Unmanaged

- ▶ Plug and Play
- ▶ No Configuration Required
- ▶ Basic Connectivity

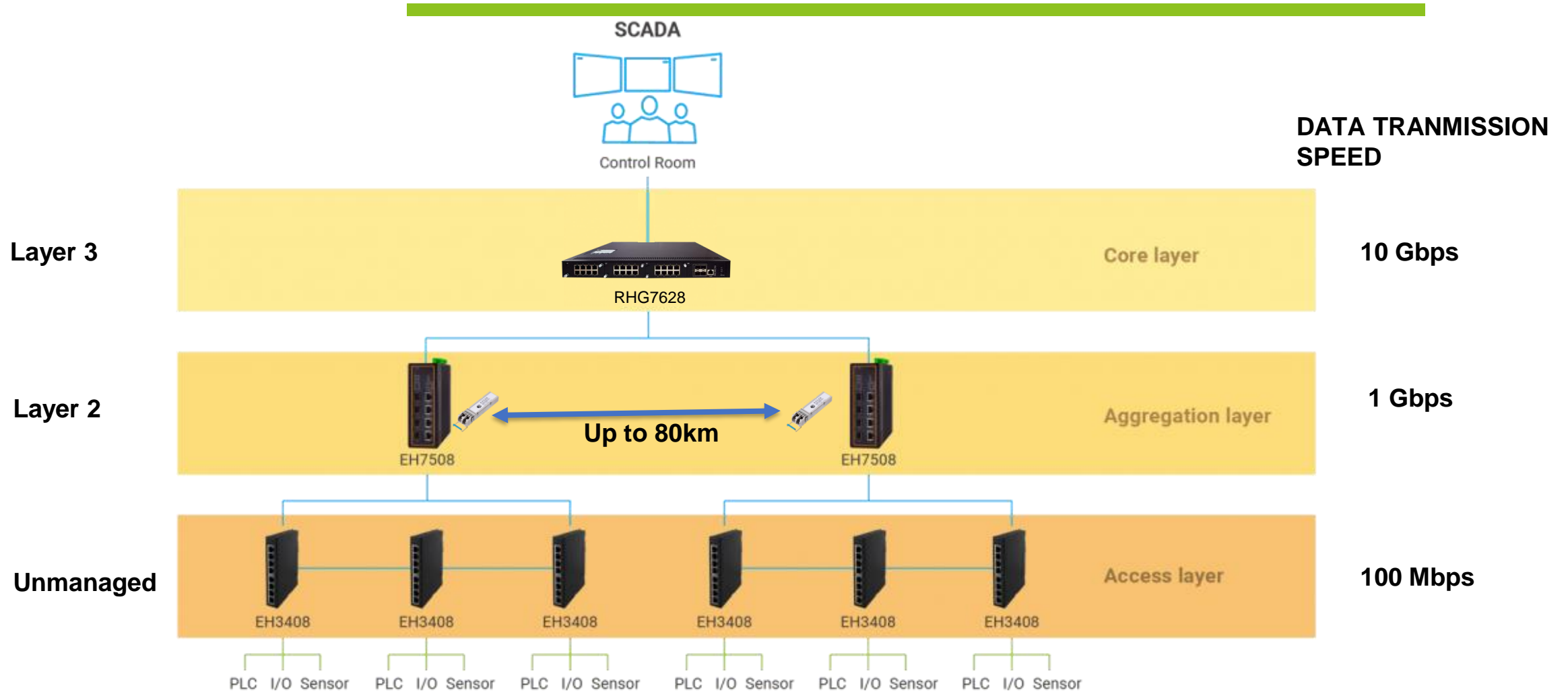
Lite-Managed

- ▶ RSTP ring
- ▶ SNMPv1/v2/v3
- ▶ Syslog and web-gui

Managed

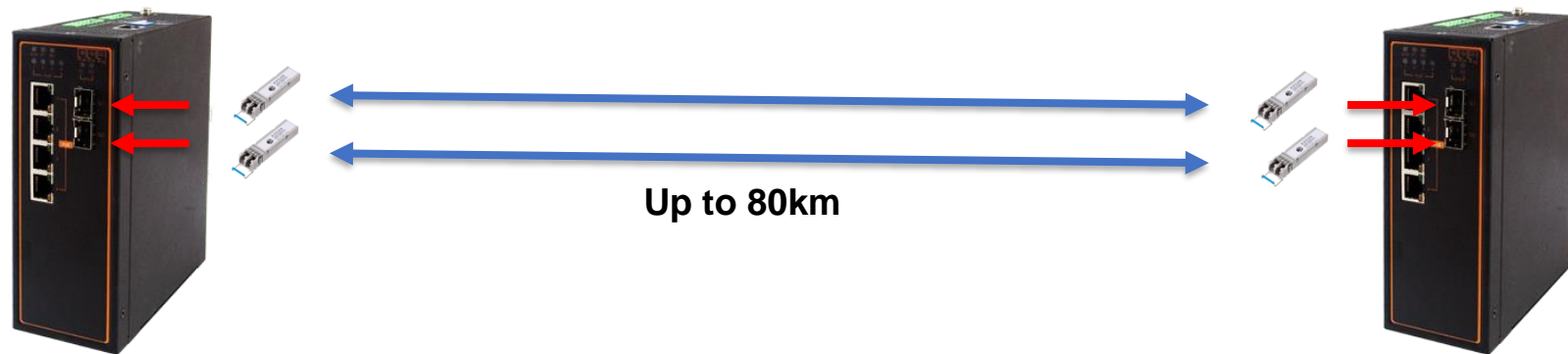
- ▶ Reliable and redundant
- ▶ High performance, deterministic and low latency
- ▶ Industrial specific features

3-layer Hierarchical Model



SFP – Small Form Pluggable

- Long distance transmission
 - Connecting switches at greater distances with fiber optic – free from EMI compared to copper



- Connection flexibilities - type of connectors



LC

SC

ST

SFP – Small Form Pluggable

- Deciding factor
 - Distance
 - Type of fiber optic cable – single mode/multimode
 - Speed
 - Wavelength
 - Connectors
 - Environment
 - Serial interfaces
 - SerDes (Serializer/Deserializer)

PoE (802.3af 15.4W)

- ▶ 802.11n access point
- ▶ Biometric access control
- ▶ IP Phone

PoE+ (802.3at 30 W)

- ▶ 802.11n high power access point
- ▶ Alarm system
- ▶ PTZ/Speed dome IP camera
- ▶ Video IP Phone
- ▶ RFID reader
- ▶ Thin Client

PoE++ (802.3bt >60W)

- ▶ 802.11ac/ax access point
- ▶ Digital signage
- ▶ Information kiosk
- ▶ POS system
- ▶ PTZ/Speed dome IP Camera



Layer 2 Switches functionalities

Layer2 -Atop Switch SW Functionality

Connectivity:

- VLAN
- GARP/GVRP/GMRP
- Unicast/ Multicast
- QoS
- Rate Control
- Storm Control
- IPv4, IPv6
- Trunk
- DHCP Server/Relay/Client
- MLD

Redundancy:

- ERPS
- Compatible Ring
- U Ring
- IA-Ring
- C-Ring
- Compatible Chain
- MRP
- STP
- RSTP
- MSTP

Diagnostic

- Mirror Port
- Telnet
- TraceRT
- Port Statistics
- Port Statue
- IGMP v1/v2/v3 Snooping
- DHCP Snooping

Security:

- Port Security
- 802.1X
- ACL
- Dynamic ARP Inspection
- SSH
- HTTPS
- TACACS+
- RADIUS
- IP source Guard
- Other IEC 62433 security features

Management:

- SNMP v1/v2c/v3
- RMON
- Syslog
- Account Management
- Web Configuration
- CLI
- Serial Console
- TFTP
- ARP
- Bootp
- LLDP

And more...

- Modbus/TCP
- IEEE 1588 PTP V1/V2
- UDLD
- Profinet
- ICMP
- SMTP (Gmail)
- NTP Server/Client
- HSR/PRP

Why Layer 3 switches

Layer2 Switch

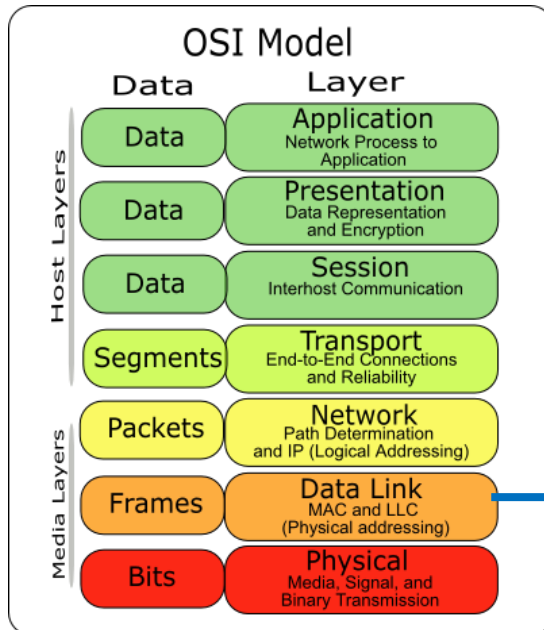
Types of Switch

Unmanaged Switch

- Plug and Play
- No Configuration Required
- Basic Connectivity

Managed Switch

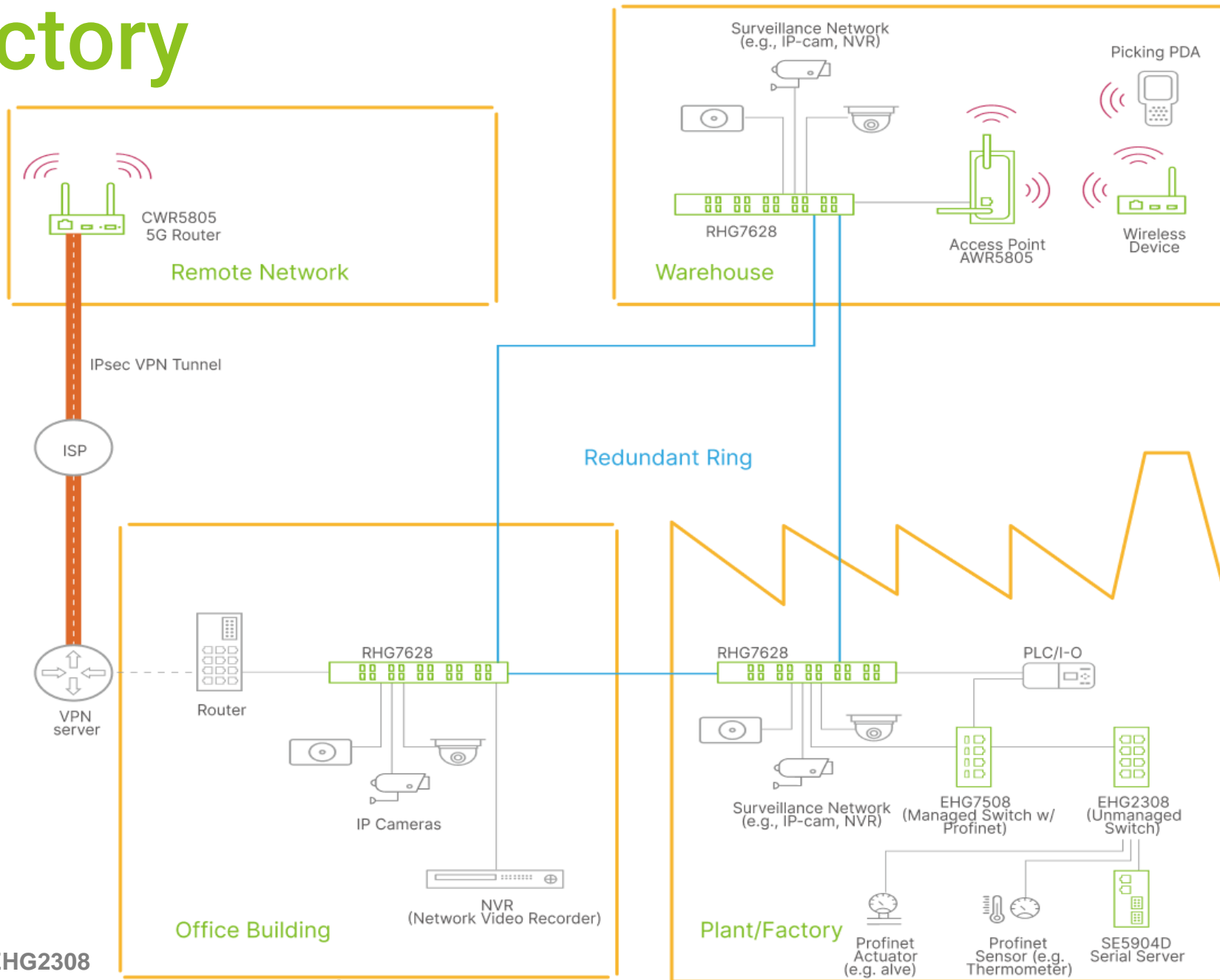
- Can Be Configured
- Greater Security
- More Features



Layer2 Switch

- Works on the Layer2 of the OSI model(MAC Address)
- Inter-VLAN Communication (**Need a L3 routing switch**)

Smart Factory



Layer3 Switch Application

- Security Management
- Fault isolation
- Traffic segregation
- Port Density
- Scalability
- Access control

L3 Switch - RHG7628
L2 Switch - EHG7508
Unmanaged Switch - EHG2308

Layer3 Switch

	Layer2	Layer3
Routing	MAC	IP Addresses
Scalability	Single Broadcast	Multiple broadcast domain
Purpose	Pure layer 2 domain	Aggregation of the network switches across different subnets

	Layer3	Router
Connection	Used for LAN connections	Used for WAN connections
Forwarding	HW(ASIC) Based forwarding decision	SW Based forwarding decision
Edge Technology	No	Yes (NAT, Firewall, Tunneling, IPsec)
Port Density	High	Low
Routing Table	Smaller Routing table compared to router	Considerably bigger to support multiple route entries

Layer3 Switch

- Switching- Includes Layer2 features
- **Routing**- Routing Protocol/ L3 multicast/ L3 Redundancy
- Used for LAN connection (Office/Data Center or Campus Environment)



Atop Offerings

Entry-Level Unmanaged Switch

No. of Port	4	5	6	8	16
Plastic Housing		EH2005 EH3005 EHG3005	EH2006	EH2008 EHG2008	
Metal Housing	EH2304-PR	EH2305 EH3305 EHG3305	EH2306	EH2308 EH2308-PR EHG2308	EH2316-2G

		Fast Ethernet RJ45	Gigabit RJ45	Fiber Port	Design	EN61000-6-2 EN61000-6-4	Profinet Compliance	Remarks
Plastic Housing	EH2005	4x FE	-	1x FE	Compact	✓	Strict QoS**	
	EH3005	5x FE	-	-	Slim	✓	Strict QoS**	
	EH2006	6x FE	-	-	Compact	✓	Strict QoS**	
	EH2008	8x FE	-	-	Compact	✓	Strict QoS**	
	EHG3005	-	5x GbE	-	Slim	✓	Strict QoS**	
	EHG2008	-	8x GbE	-	Compact	✓	Strict QoS**	
Metal Housing	EH2305	4x FE	-	1x FE	Compact	✓	Strict QoS**	
	EH3305	5x FE	-	-	Slim	✓	Strict QoS**	
	EH2306	6x FE	-	-	Compact	✓	Strict QoS**	
	EH2308	8x FE	-	-	Compact	✓	Strict QoS**	E-mark *
	EH2316-2G	14x FE	2x GbE	-	Compact	✓	Strict QoS**	
	EHG3305	-	5x GbE	-	Slim	✓	Strict QoS**	
	EHG2308	-	8x GbE	-	Compact	✓	Strict QoS**	

Advanced Switches for Factory Automation

No. of Port	4	5	6	7	8	9	10	11	12	20
Unmanaged	EHG7305		EHG7306	EHG7307	EHG6438	EHG6410				
Lite-Managed					EHG2438 EH3438 EHG6508 NSG3308	NSG3309	EHG6510			
Managed	EHG7504 EHG7704	EH7506 EHG7706		EH7508 EHG7508 EHG7708		EHG7711		EH7512	EH7520	

Category	Product	Profinet	Fast Ethernet RJ45 Port	Gigabit RJ45 Port	Fiber Port	PoE/PoE+	Notes
Unmanaged	EHG7305/6/7	QoS only	-	5x GbE	0/1/2x Gb	Max. 4	
	EHG6438/10	QoS only	-	8/10x GbE	0/2x Gb	Max. 8	(12V/24V PoE Booster)
Lite-Managed	EHG2438	QoS only	-	8x GbE	0/2x Gb	x	x
	EH3438	QoS only	8x FE	-	-	x	x
	EHG6508/10	QoS only	-	8x GbE	0/2x Gb	Max. 8	(12V/24V PoE Booster)
	NSG3308/09			8/9 x GbE	0/2x Gb	x	NAT ports
Managed	EH7506/08	CC-B	4x FE	4x combo	4x Gb combo	Max. 4	
	EH7512/20	CC-B	8/16x FE	4x combo	4x Gb combo	Max. 8	
	EHG7504/08	CC-B	-	2/4/8x FE	0/2/4x Gb	Max. 8	
	EHG7704/06/08/11	on demand		4/8x GbE	0/1/2x Gb 2x 2.5Gb	Max. 8	(IEEE802.3bt)

Switches for Smart Cities

Lite-Managed		EHG6508		EHG6510																	
Managed	EHG7504	EH7506	EHG7508	EHG7708	EHG7512	EHG7516	EHG7520	RHG7528	RHG9728												
	EHG7704		EHG7711																		
Layer-3		EHG7604		EHG7608		EHG7612		EHG7616		EHG7620		RHG7628		RHG9828							
Ports		4		5		6		7		8		10		12		16		20		28	

Category	Model	Fast-Ethernet RJ45	Gigabit RJ45	Fiber SFPs	Max PoE ports	NEMA TS-2	Remarks
Lite Managed	EHG6508/10	-	8	-/2	8 (booster)		
Managed	EHG7506/8/12/20	Max 4/4/8/16	-/4/4/4	2/4/4/4	4/4/8/8	✓	
	EHG7504/08	-	Max 4/8	Max 2/4	4/8	✓	
	EHG7512/16/20	-	Max 8/12/16	Max 8/12/16 +4x10G	8	✓	10G uplinks
	EHG7704/08/11	-	Max 4/8/10	Max 4/8/11	4/8/8 (PoE++)	✗	Opt. 2.5G uplinks
	RHG7528	-	Max 24	Max 24 + 4x10G	24	✗	10G uplinks
	RHG9728	-	Max 24	Max 24 + 4x10G	24 (PoE++)	✓	10G uplinks
Layer-3	EHG7604/08	-	Max 4/8	Max 2/4	4/8	✓	
	EHG7612/16/20	-	Max 8/12/16	Max 8/12/16 +4x10G	8	✓	10G uplinks
	RHG7628	-	Max 24	Max 24 + 4x10G	24	✗	10G uplinks
	RHG9828	-	Max 24	Max 24 + 4x10G	24 (PoE++)	✓	10G uplinks

IEC61850-3 Switch



No. of Ports	8	11	12	28
Managed	EHG9508	EH9711	EHG9512	RHG9528 RHG9728
Layer-3	EHG9608		EHG9612	RHG9628 RHG9828

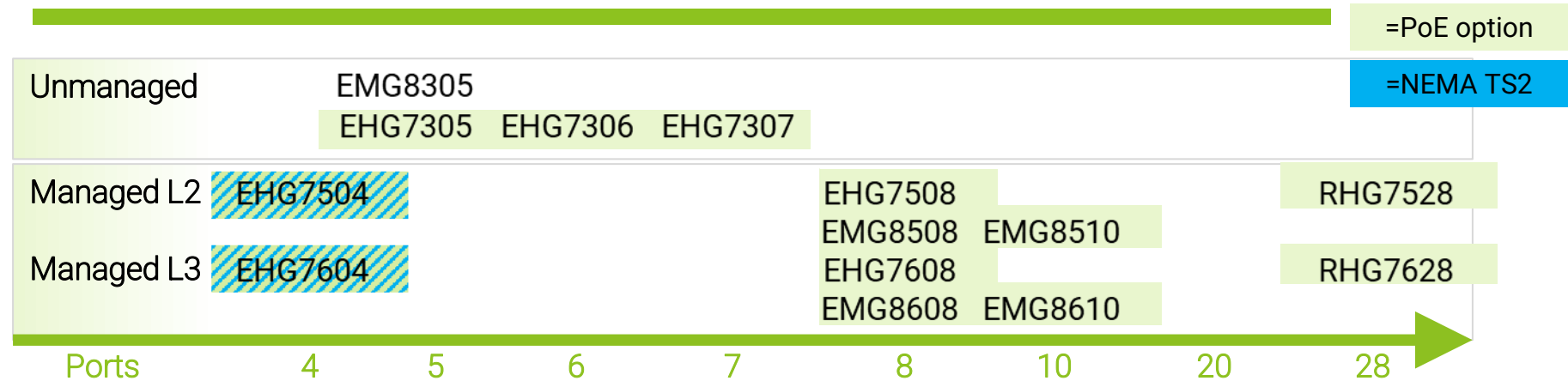
Comparison matrix		HSR/PRP	10/100 RJ45	Giga RJ45	Fiber	PTP TC	PTP BC	Power Input
Managed	EH9711-3SFP	x	8x FE	-	3x Gb	✓ (E2E & P2P)	✓	24-48/88-300 VDC 88-264 VAC
	EHG9508-2SFP	x	-	6x GbE	2x Gb	✓ (E2E)	x	24-57/110-370 VDC 100-243 VAC
	EHG9512-4SFP	x	-	8x GbE	4x Gb	✓ (E2E)	x	
	RHG9528	✓ Max. 4G	-	Max. 24x GbE	Max 24 + 4x10G	✓ (E2E & P2P)	✓	24-370 VDC 90-264 VAC
	RHG9728	x	-	Max. 24x GbE	Max 24 + 4x10G	✓ (E2E & P2P)	✓	12-120/120-380 VDC 100-243 VAC PoE: 48-57 VDC
Layer-3	EHG9608-2SFP	x	4x FE	6x GbE	2x Gb	✓ (E2E)	x	24-57/110-370 VDC 100-243 VAC
	EHG9612-4SFP	x	8/16x FE	8x GbE	4x Gb	✓ (E2E)	x	
	RHG9628	✓ Max. 4G	-	Max. 24x GbE	Max 24 + 4x10G	✓ (E2E & P2P)	✓	24-370 VDC 90-264 VAC
	RHG9828	x	-	Max. 24x GbE	Max 24 + 4x10G	✓ (E2E & P2P)	✓	12-120/120-380 VDC 100-243 VAC PoE: 48-57 VDC

AtEX Switch for Oil & Gas

No. of Port	4	5	6	7	8	10	12	16
Unmanaged		EMG8305 EHG7305	EHG7306	EHG7307				
Managed	EHG7504				EHG7508 EMG8508	EMG8510		
Layer-3	EHG7604				EHG7608 EMG8608	EMG8610		

IP	Category	Model	AtEX	Status	Class/Division	Gigabit	PoE/+	Fiber Port
IP67	Unmanaged	EMG8305	Zone 2	Compliant	Class1/Division2	5x M12-A or X	-	-
	Managed	EMG8508/10	Zone 2	Compliant	Class1/Division2	8x M12-X	Max. 8	0/2x Gb
	Layer-3	EMG8608/10	Zone 2	Compliant	Class1/Division2	8x M12-X	Max. 8	0/2x Gb
IP30	Unmanaged	EHG7305/06/07	Zone 2	Certified	Class1/Division2	5x RJ45	Max. 4	1/2x Gb
	Managed	EHG7504/08	Zone 2	Compliant	Class1/Division2	4/8x RJ45	Max. 4/8	Max 2/4
	Layer-3	EHG7604/08	Zone 2	Compliant	Class1/Division2	4/8 RJ45	Max. 4/8	Max 2/4

Ethernet Switches for Railway & Trackside



	EN50155 EN50121	EN45545-2	NEMA TS2	Interface	Fast- Ethernet	Gigabit	PoE PoE+	Remarks
IP67 Series								
>> EMG8305	✓	✗	✗	M12(A)/(X)	✗	5	x	Unmanaged
>> EMG8508/10	✓	✓	✗	M12(X)/SFP	✗	8/8+2	Up to 8	Managed L2
>> EMG8608/10	✓	✓	✗	M12(X)/SFP	✗	8/8+2	Up to 8	Managed L3
IP30 Series								
>> EHG7305/6/7	✓	TBD	✗	RJ45/SFP	✗	5/5+1/5+2	Up to 4	Unmanaged
>> EHG7X04/08	✓	TBD	✓	RJ45/SFP	✗	4/8	Up to 8	Managed L2/L3
>> RHG7X28	✓	TBD	✗	RJ45/SFP	✗	24	Up to 24	Managed L2/L3

Layer2 -Atop Switch Product Portfolio

	Smart Grid	Automation	Railway	Marine	Traffic Control
	 IEC 61850-3 IEEE 1588	 Industrial IoT CE/FCC/UL	 EN 50155	 	 NEMA TS-2
10Gbps	RHG9528 RHG9728	RHG7528 EHG7520 EHG7516 EHG7512	RHG7528	EHG7520 EHG7516 EHG7512	EHG7520 EHG7516 EHG7512
2.5Gbps		EHG7706 EHG7708 EHG7711			
Gigabit	EHG9508 EHG9510 EHG9512	EHG7504 EHG7508 EMG8508 EMG8512 EHG6508 EHG6510 NSG3308 NSG3309	EHG7504 EHG7508 EMG8508 EMG8512		EHG7504 EHG7508
FE	EH9711	EH7520 EH7512 EH7508 EH7506			EH7512 EH7508 EH7506



Q&A